

1380.0.55.007 - Perspectives on Regional Australia: Population Growth and Turnover in Local Government Areas (LGAs), 2006-2011

Latest ISSUE Released at 11:30 AM (CANBERRA TIME) 21/01/2013

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INTRODUCTION

Between 2006 and 2011, the East Pilbara region in Western Australia had both the highest growth in population and the highest population turnover, that is, people moving into and out of the region. However, high growth and high turnover do not always go hand in hand, and regions with different rates of growth and turnover present different issues for the planning, design and delivery of services and infrastructure, and have different labour market characteristics.

This article uses data from the 2006 and 2011 Censuses of Population and Housing to explore:

- Which Local Government Areas had high population growth and high (or low) turnover rates of people moving in or out between 2006 and 2011;
- Which Local Government Areas had low population growth and high (or low) turnover rates of people moving in or out between 2006 and 2011.

Population growth and turnover data for all LGAs is available in the datacube on the downloads tab. All of the maps contained in this article are also available on the downloads tab in pdf format.

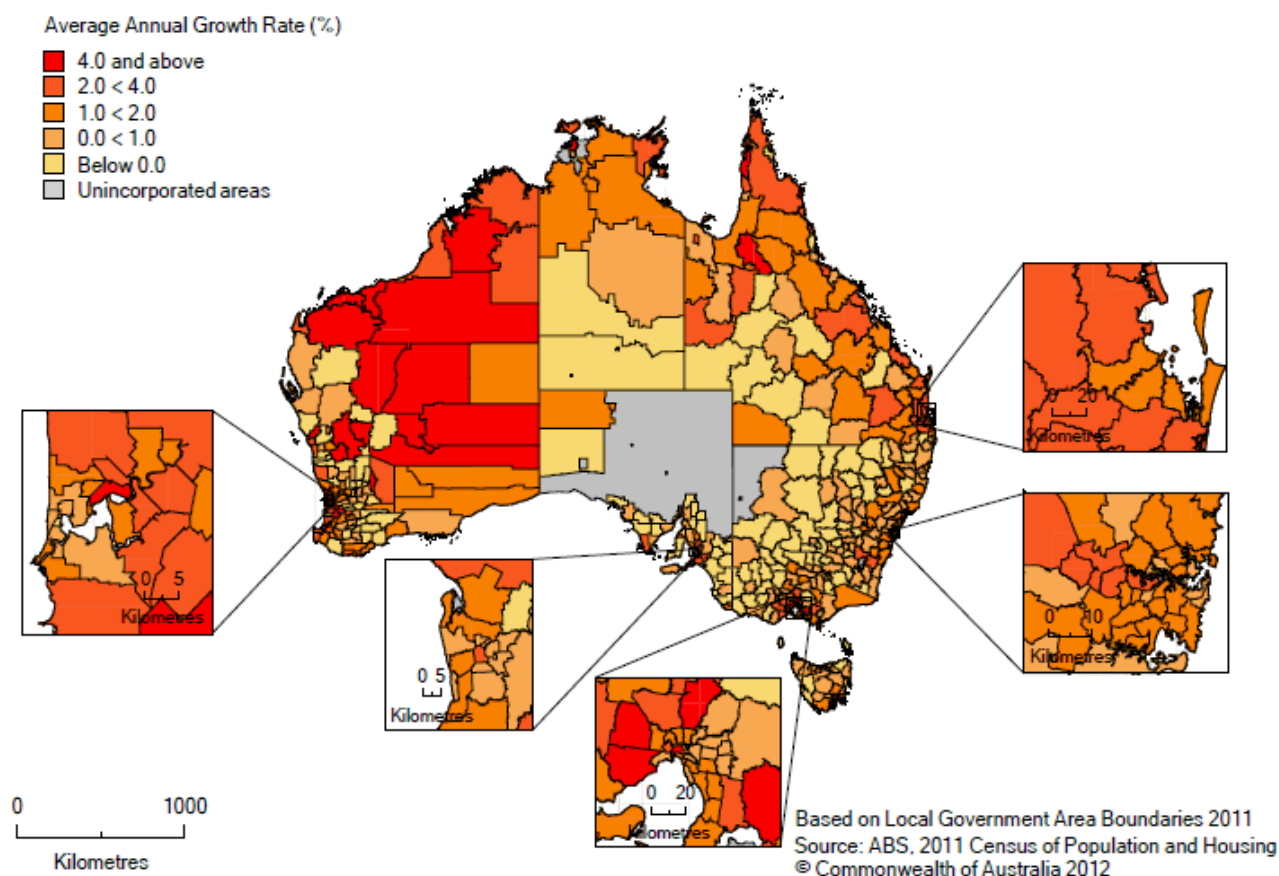
This updates previous analysis of data released in Perspectives on Regional Australia: Population Growth and Turnover in Local Government Areas (LGAs), 2001 to 2006 (cat. no. 1380.0.55.007).

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REGIONAL VARIATIONS IN POPULATION GROWTH, 2006 TO 2011

The average annual population growth rate in Australia, based on Census counts of usual residents, was 1.6% between 2006 and 2011. Among the 461 Local Government Areas (LGAs) with a Census population count of more than 1500 in 2006, average annual population growth varied between an increase of 12.8% in East Pilbara (S) in Western Australia and a decrease of 3.9% in Robe (DC), in south-eastern South Australia. Map 1 shows the regional variation in the average annual population growth rates in Australia between 2006 and 2011.

MAP 1. AVERAGE ANNUAL POPULATION GROWTH - Local Government Areas, 2006 to 2011



The LGAs with the ten highest and lowest average annual population growth rates are presented in Table 1. Seven of the ten areas with the highest growth rates were in Western Australia. These include the remote northern LGAs of East Pilbara (S), Ashburton (S) and Roebourne (S), all LGAs with mining activity, as well as the capital city LGA of Perth (C), and Serpentine-Jarrahdale (S) and Wanneroo (C) in the Greater Capital City Statistical Area (GCCSA) of Perth. The remaining three of the ten areas with the highest population growth rates were in the GCCSA of Melbourne in Victoria. All of the ten LGAs with the lowest average annual population growth rates were in regional or remote areas.

TABLE 1. AVERAGE ANNUAL POPULATION GROWTH RATES - Top Ten and Bottom Ten LGAs, 2006 to 2011 (a)

Rank	State	LGA	2006 Census count (no.)	2011 Census count (no.)	Average annual growth rate (b) (%)
TOP TEN LOCAL GOVERNMENT AREAS					
1	WA	East Pilbara (S)	6,546	11,950	12.8
2	WA	Ashburton (S)	6,080	10,001	10.5
3	WA	Perth (C)	11,480	16,715	7.8
4	VIC	Wyndham (C)	112,698	161,577	7.5
5	WA	Capel (S)	10,209	14,637	7.5
6	WA	Roebourne (S)	16,419	22,899	6.9
7	VIC	Melton (S)	78,909	109,258	6.7
8	WA	Serpentine-Jarrahdale (S)	12,893	17,745	6.6
9	WA	Wanneroo (C)	110,941	152,076	6.5
10	VIC	Cardinia (S)	57,116	74,175	5.4
BOTTOM TEN LOCAL GOVERNMENT AREAS					
452	WA	Kojonup (S)	2,153	1,981	-1.7
453	SA	Cleve (DC)	1,899	1,733	-1.8
454	NSW	Brewarrina (A)	1,943	1,766	-1.9
455	NSW	Jerilderie (A)	1,643	1,495	-1.9
456	NSW	Wakool (A)	4,365	3,962	-1.9
457	SA	Peterborough (DC)	1,904	1,731	-1.9
458	NSW	Murrumbidgee (A)	2,503	2,261	-2.0

459	SA	Cooper Pedy (DC)	1,911	1,694	-2.4
460	NSW	Hay (A)	3,379	2,958	-2.6
461	SA	Robe (DC)	1,702	1,397	-3.9

(a) Based on 2011 LGA boundaries and excluding unincorporated areas and LGAs with a population of under 1500 in 2006.

(b) See Appendix 2: Data and methodological limitations for details of how this is calculated.

Source: Census of Population and Housing, 2006 and 2011

Note: This table is based on place of usual residence. Cells in this table have been randomly adjusted to avoid the release of confidential data.

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REGIONAL VARIATIONS IN POPULATION TURNOVER, 2006 TO 2011

Population turnover rates measure the movement of people into and out of a region. Population turnover rates may indicate change in the composition of a region's population, which can have an effect on the region's economy, housing market and demand for services. Additional analysis is needed to determine whether turnover is associated with compositional change in a region. For example, a university town may have high turnover as a result of students coming and going, but if the student populations have similar characteristics over time, the composition of the region's population will not change. On the other hand, an area which has undergone significant urban renewal might have high turnover and compositional change in the population, as the new residents who are attracted to the area may have different age and income profiles than the former residents. The Census Community Profiles for 2006 and 2011 (available on the Census page of the ABS website) provide useful information for assessing population composition, economic and other changes in regions.

For each LGA, the population turnover rate shows how many, out of every thousand people, moved into and / or left the LGA between 2006 and 2011. The median population turnover rate of all LGAs in Australia was 441.9 arrivals (people who moved in) and departures (people who left) per thousand people. Map 2 and Table 2 show population turnover rates for LGAs between 2006 and 2011, based on Census data. Map 2 shows some areas of high population turnover in Western Australia and Queensland, and some areas of low population turnover in New South Wales, Victoria, and Tasmania. Further information, including the arrivals, departures and turnover rate for each LGA, is available in the datacube on the downloads tab.

MAP 2. POPULATION TURNOVER RATES - Local Government Areas, 2006 to 2011

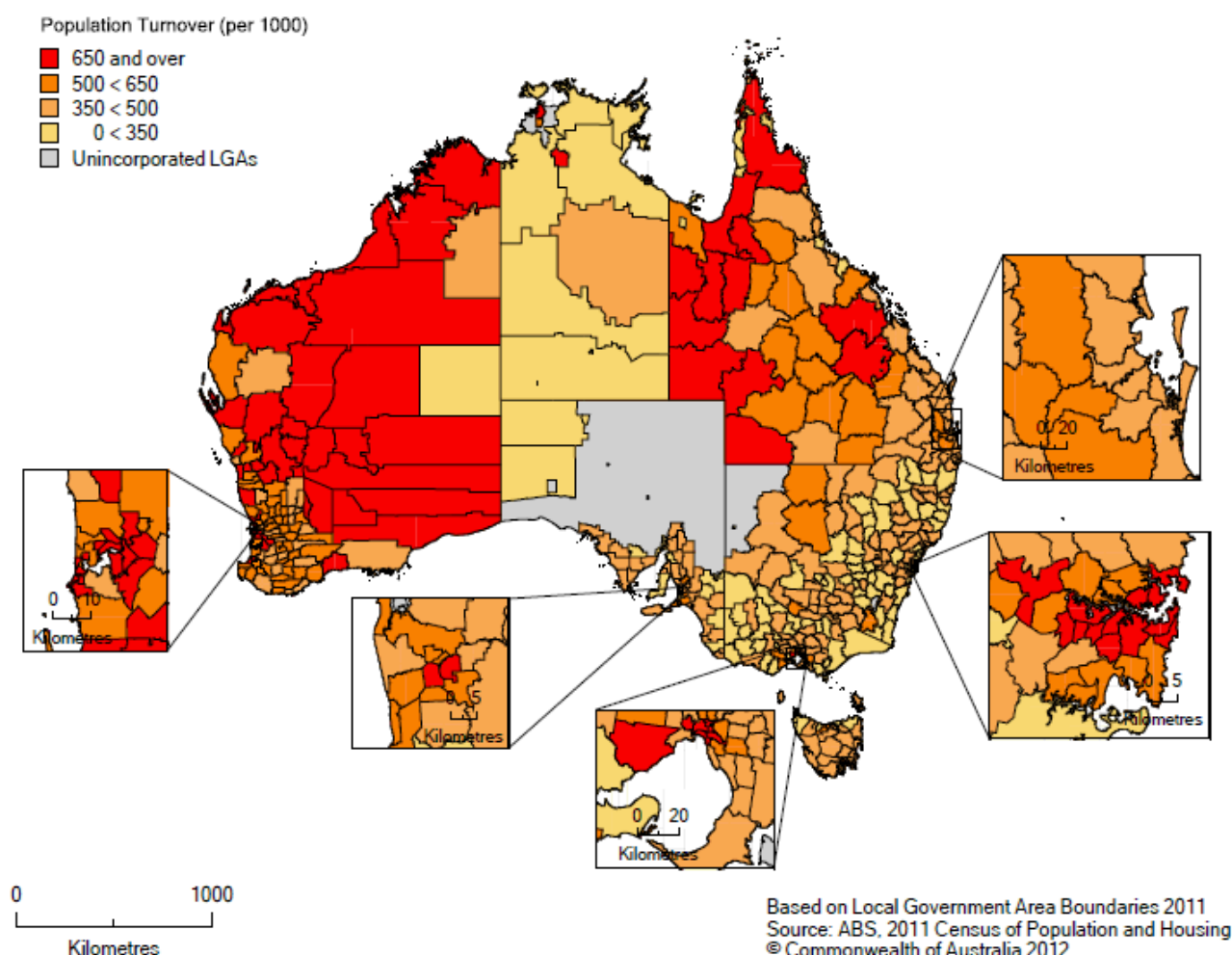


Table 2 presents, for LGAs with more than 1500 residents in 2006, the LGAs with the highest and lowest population turnover rates. Table 2 also provides the breakdown of arrivals - the number of people who moved in to the LGA - and departures - the number of people who moved out of the LGA between 2006 and 2011. This is important because the implications of population turnover are different depending on whether the turnover is a result of people moving in, people moving out, or both. This information is provided for all LGAs in the datacube which accompanies this article.

The LGAs of Perth (C), together with East Pilbara (S), Ashburton (M), Roebourne (S) and Port Hedland (T) in the Pilbara mining region of Western Australia, and Roxby Downs (M), a mining area in northern South Australia, make up the top six LGAs in terms of population turnover rates.

The LGAs with lowest population turnover rates are mostly in regional and remote areas and include East Arnhem (S), the Tiwi Islands (CGC) and MacDonnell (S) in the Northern Territory, Yarrabah (C) and Palm Island (S) in Queensland and Anangu Pitjantjatjara (AC) in South Australia.

TABLE 2. POPULATION TURNOVER RATES, Top Ten and Bottom Ten LGAs - 2006 to 2011 (a)

Rank	State/LGA	Modified 2006 Census count (b) (no.)	Arrivals (b) (no.)	Departures (c) (no.)	Population flow (no.)	Population turnover (d) (per 1000)
TOP TEN LOCAL GOVERNMENT AREAS						
1	WA East Pilbara (S)	3,500	5,193	2,086	7,279	2,079.7
2	WA Ashburton (S)	3,811	4,699	2,745	7,444	1,953.3
3	WA Perth (C)	8,146	9,520	3,875	13,395	1,644.4
4	WA Roebourne (S)	9,801	8,624	6,347	14,971	1,527.5
5	WA Port Hedland (T)	7,639	5,700	4,180	9,880	1,293.4
6	SA Roxby Downs (M)	3,091	1,946	1,879	3,825	1,237.5

7	VIC	Melbourne (C)	61,486	49,346	23,512	72,858	1,185.0
8	SA	Adelaide (C)	13,830	10,301	5,786	16,087	1,163.2
9	WA	Victoria Park (T)	22,841	13,601	8,549	22,150	969.7
10	NT	Palmerston (C)	18,177	9,454	8,053	17,507	963.1
BOTTOM TEN LOCAL GOVERNMENT AREAS							
452	VIC	Colac-Otway (S)	18,066	2,364	2,399	4,763	263.6
453	NSW	Bombala (A)	2,302	256	340	596	258.9
454	VIC	Latrobe (C)	60,252	8,562	6,937	15,499	257.2
455	NT	MacDonnell (S)	4,523	500	630	1,130	249.8
456	NSW	Broken Hill (C)	16,702	1,648	2,408	4,056	242.8
457	QLD	Palm Island (S)	1,697	122	270	392	231.0
458	NT	Tiwi Islands (S)	1,874	218	210	428	228.4
459	SA	Anangu Pitjantjatjara (AC)	1,953	219	212	431	220.7
460	QLD	Yarrabah (S)	2,056	103	347	450	218.9
461	NT	East Arnhem (S)	7,075	450	337	787	111.2

(a) Based on 2011 LGA boundaries and excluding unincorporated areas and LGAs with a population of under 1500 in 2006.

(b) Excludes people in the 2011 Census who were aged 0-4 years and those who did not state where they lived 5 years ago.

(c) Excludes No Usual Address.

(d) Calculated using the modified 2006 Census count. See Appendix 2: Data and methodological limitations for details.

Source: Census of Population and Housing, 2006 and 2011

Note: This table is based on place of usual residence. Cells in this table have been randomly adjusted to avoid the release of confidential data.

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POPULATION GROWTH AND TURNOVER, 2006 TO 2011

Analysing population growth rates and population turnover rates together is useful because it can provide additional insight into the dynamics of a region's population and the needs of the community living there. For example, this analysis can help to explain why the demographic characteristics and demand for services in a region are changing even if the population count is relatively stable.

Between 2006 and 2011, the median average annual population growth rate for LGAs was 0.9%, and the median population turnover rate was 441.9 arrivals and departures per thousand people. However, the LGAs that experienced high population growth between 2006 and 2011 did not necessarily have high population turnover in that same period. For example, Ballarat (C) had a relatively high average annual population growth rate of 1.9% between 2006 and 2011, but a low population turnover rate of 348.6 per thousand.

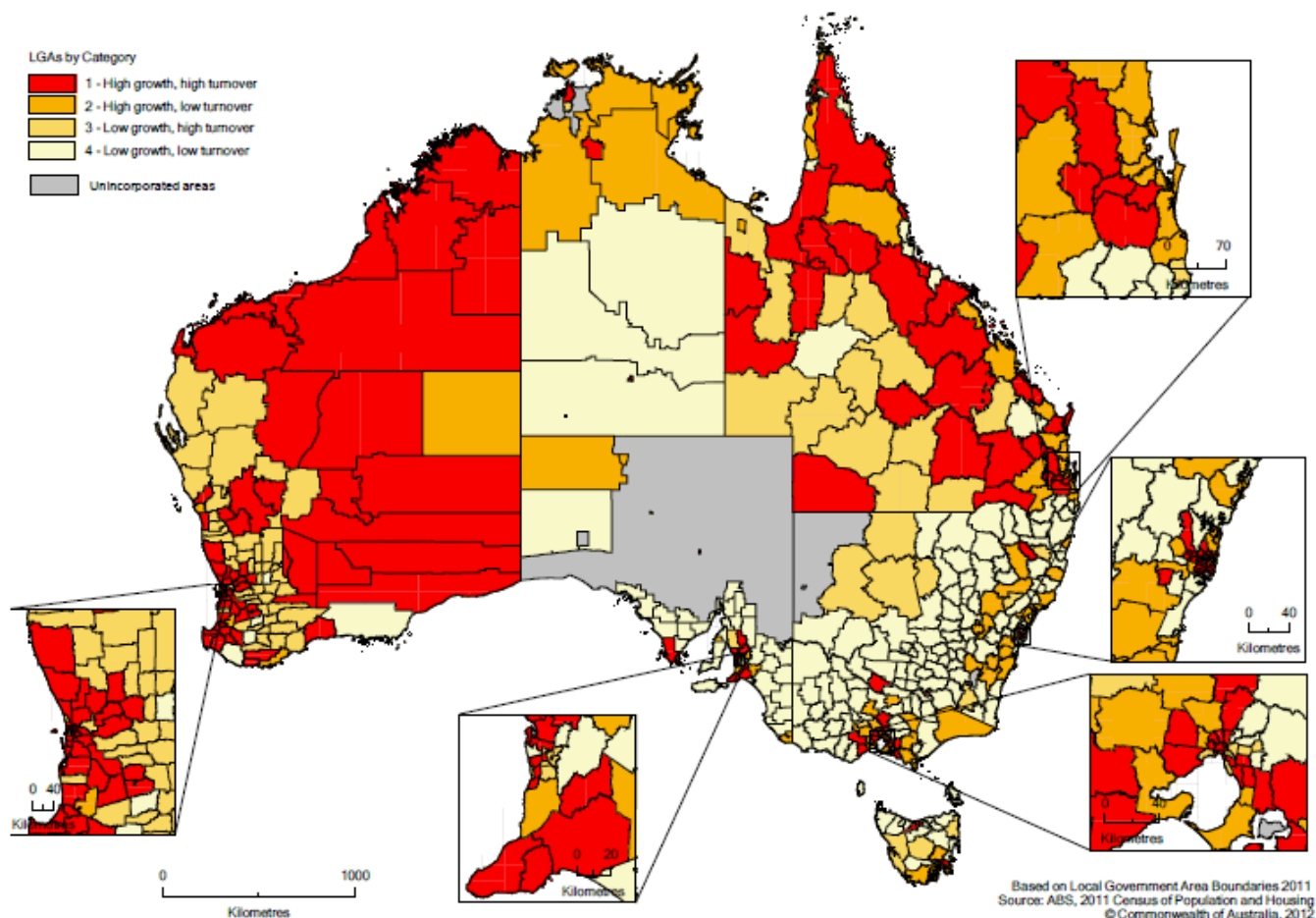
To examine LGAs from both a population growth and a population turnover perspective, LGAs can be grouped into one of the following four categories:

1. High growth and high turnover;
2. High growth and low turnover;
3. Low growth and high turnover;
4. Low growth and low turnover.

In this article, LGAs were considered to have high (or low) population growth if their average annual population growth rate was above (or below) the median growth rate for all LGAs. Similarly, LGAs were considered to have high (or low) population turnover if their population turnover rate was above (or below) the median turnover rate for all LGAs. Each of the four categories presents different issues, for example, for planners, policy makers and service providers. Some examples of these issues are provided in the following discussion.

Map 3 presents the results of classifying LGAs into these four categories.

MAP 3. POPULATION GROWTH AND POPULATION TURNOVER RATES - Local Government Areas, 2006 to 2011



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CATEGORY 1: HIGH POPULATION GROWTH AND HIGH POPULATION TURNOVER, 2006 TO 2011

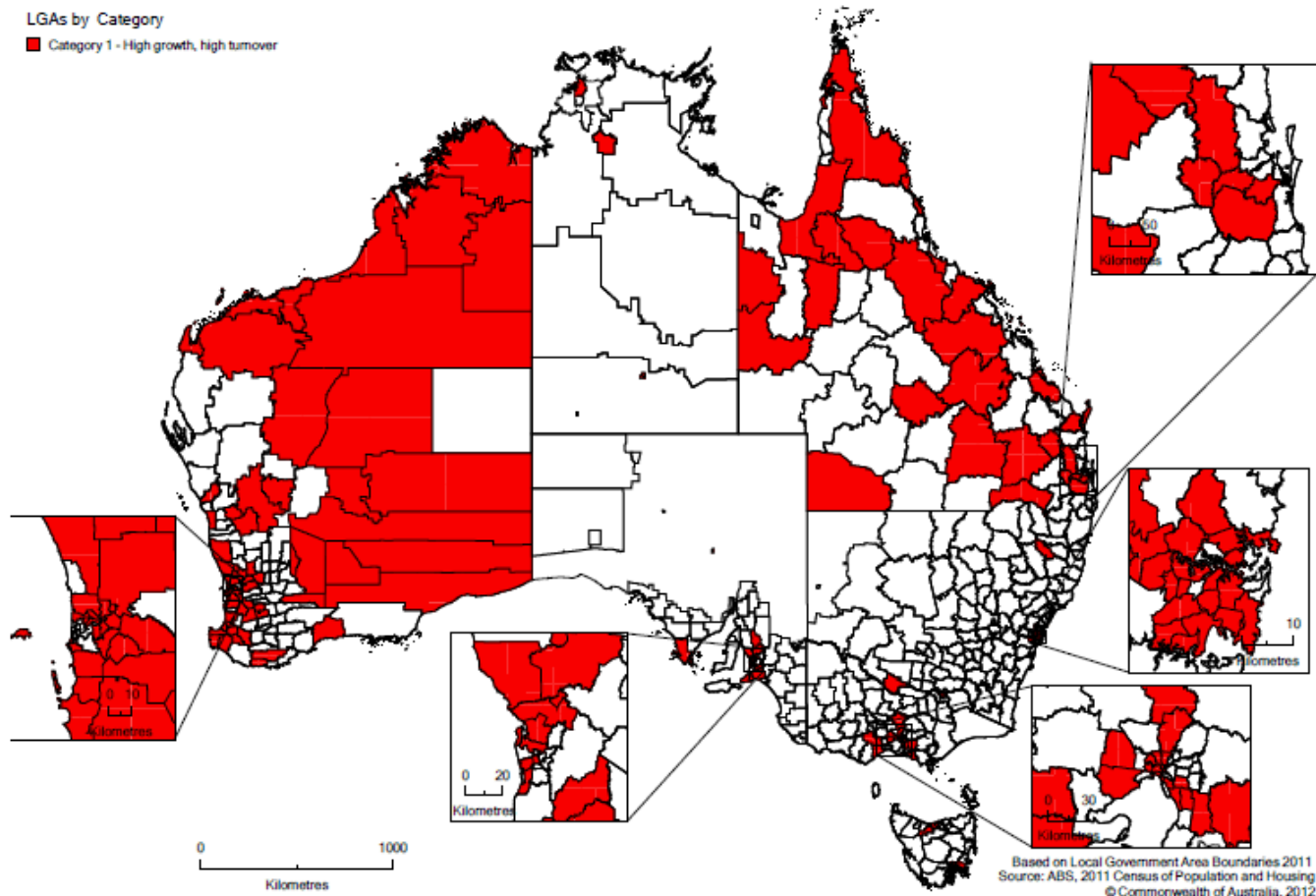
During the period between 2006 and 2011, there was high population growth and high turnover in 173 LGAs across Australia and these LGAs face particular challenges. High population turnover indicates a dynamic and changing population, which may have different service, infrastructure and amenity needs than areas with low population turnover. High growth may indicate change in the composition of a region's land or built environment, such as in areas where new dwellings have been built to house the increasing population.

The LGAs with high population growth and high population turnover between 2006 and 2011 were predominantly in Western Australia, Queensland and the Northern Territory, as shown in Map 4. The majority of Western Australian LGAs (54%) fell into this category, as did 38% of Northern Territory LGAs and 37% of Queensland LGAs.

In Western Australia, LGAs with high population growth and high population turnover were in the mining areas of East Pilbara (S), Ashburton (S), Roebourne (S) and Port Hedland (T). There were also many in and around Perth and its environs, including Perth (C), Victoria Park (T), Vincent (T), Subiaco (C), and Belmont (C). In Queensland, Weipa (T), Isaac (R) and Mt Isa (C), all LGAs with mining activity, also fell into this category.

LGAs with high population growth and turnover in other states and territories included Roxby Downs (M) and Adelaide (C) in South Australia, Melbourne (C) and Wyndham (C) in Victoria, Palmerston (C) and Darwin (C) in the Northern Territory, and North Sydney (A), Sydney (C), Auburn (A) and Parramatta (C) in New South Wales.

Map 4. CATEGORY 1 LGAs: HIGH POPULATION GROWTH AND HIGH POPULATION TURNOVER RATES, 2006 to 2011



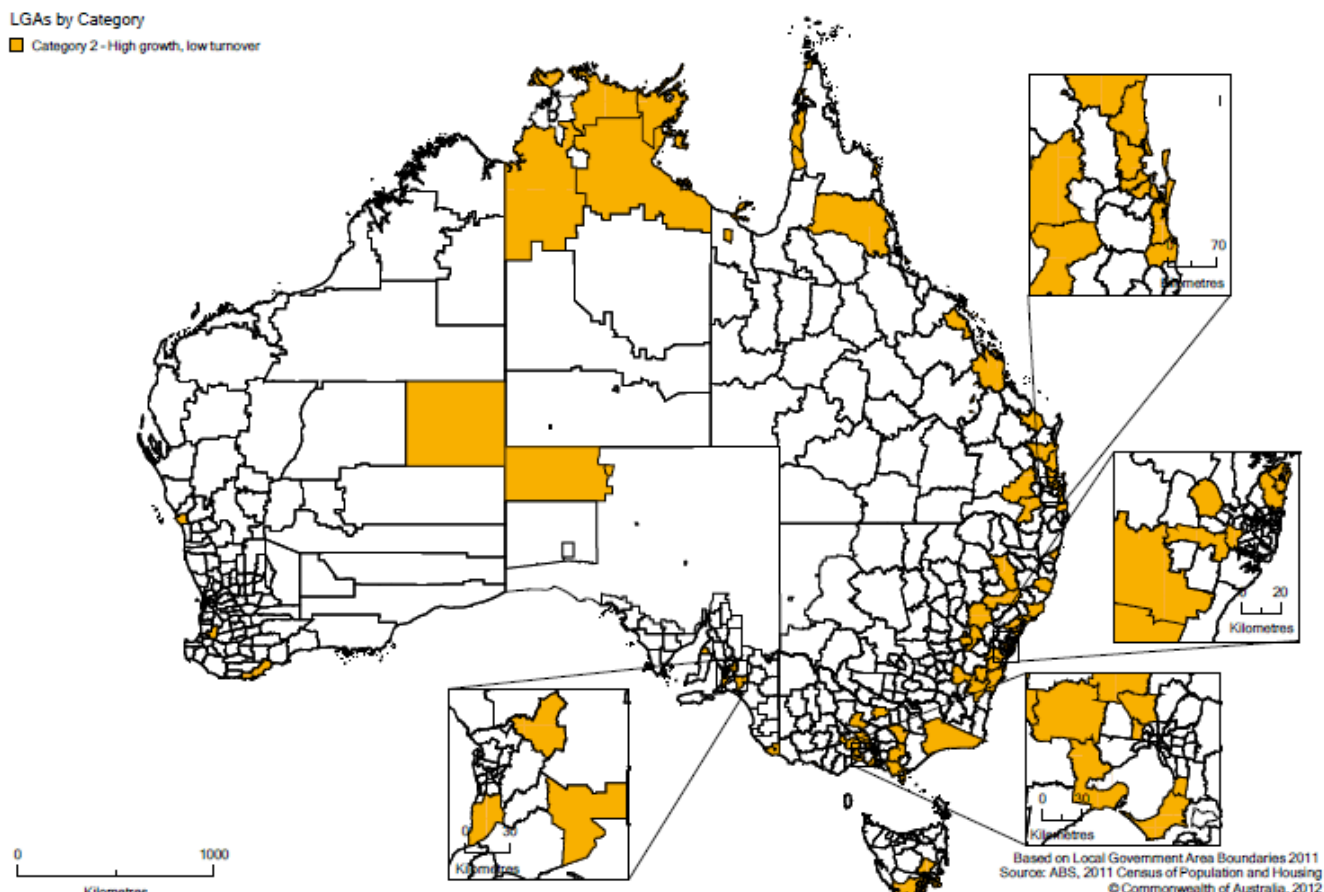
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CATEGORY 2 : HIGH POPULATION GROWTH AND LOW POPULATION TURNOVER, 2006 TO 2011

LGAs with high population growth and low population turnover face challenges associated with new arrivals to the area, such as more people requiring services in the community. Fifteen percent of all LGAs fell into this category between 2006 and 2011, including the regional centres of Greater Bendigo (C), Ballarat (C), Greater Shepparton (C) and Warrnambool (C) in Victoria, Orange (C) and Tamworth Regional (A) in New South Wales, Toowoomba (R) and Bundaberg (C) in Queensland and Barossa (DC) and Murray Bridge (RC) in South Australia.

LGAs in and around capital cities that experienced high population growth and low population turnover over this period included Frankston (C) and Hume (C) in Melbourne, Blacktown (C), Liverpool (C) and Bankstown (C) in Sydney and Brisbane (C).

MAP 5. CATEGORY 2 LGAs: HIGH POPULATION GROWTH AND LOW POPULATION TURNOVER RATES, 2006 to 2011



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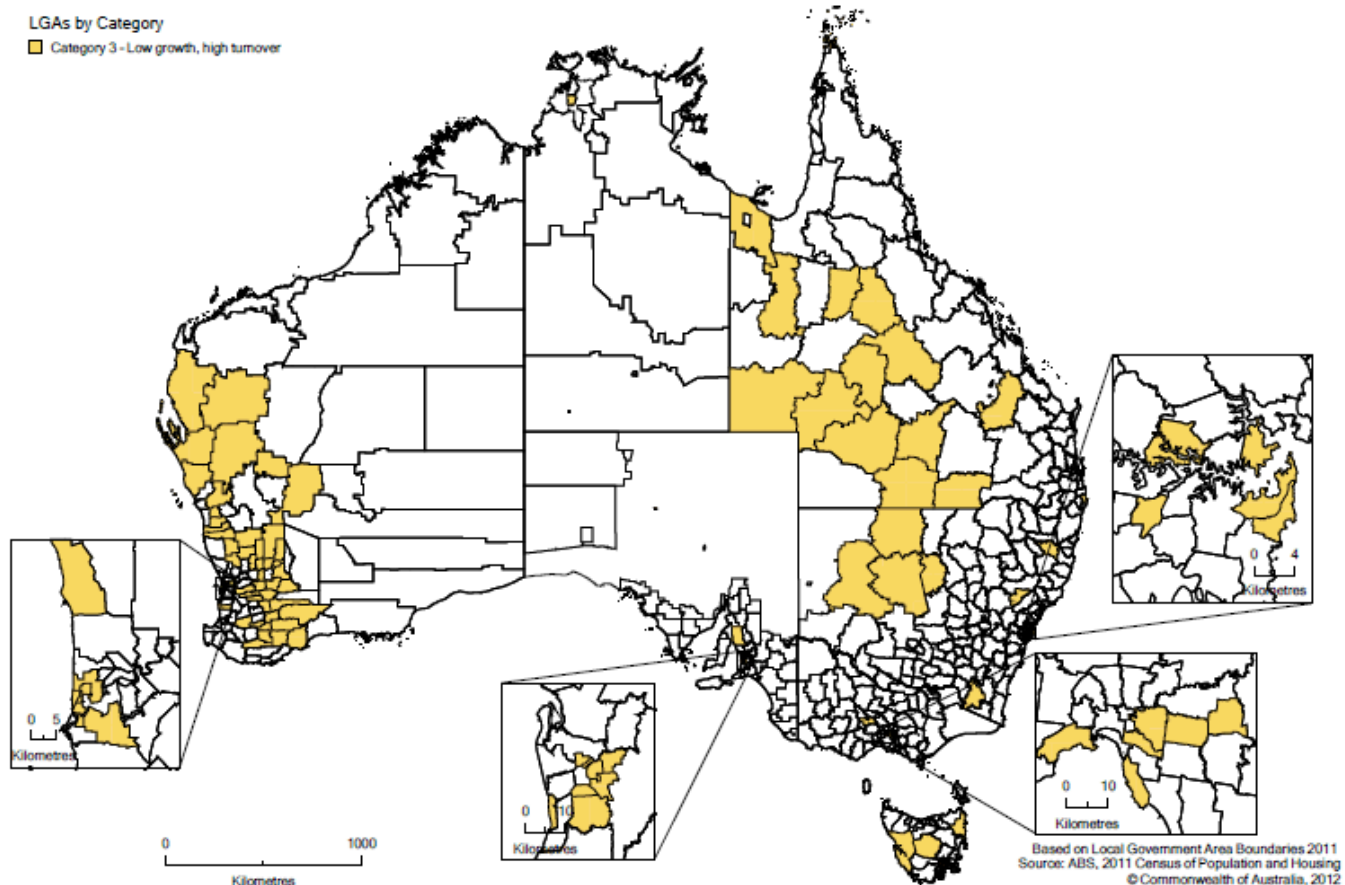
CATEGORY 3: LOW POPULATION GROWTH AND HIGH POPULATION TURNOVER, 2006 TO 2011

LGAs with low population growth and high population turnover may face challenges due to the changing composition of their populations. For example, the new residents may have different needs than the previous residents, or the turnover may create additional work for service providers even if the level of services a community requires remains the same. As Map 6 shows, many rural and remote LGAs fell into this category between 2006 and 2011. There were also many established LGAs in capital cities in this category. In cities, population growth may be constrained by limited space for new housing developments and other reasons.

The states with the highest proportion of LGAs in this category were Western Australia and Queensland (40% and 19% respectively). In Western Australia, this category included the outer regional and remote LGAs such as Katanning (S), Carnarvon (S) and Northhampton (S), as well as many metropolitan LGAs such as Claremont (T), Mosman Park (T) and Cottesloe (T). In Queensland, LGAs in this category included the outer regional and remote LGAs of Cloncurry (S), Torres (S), Longreach (R) and Flinders (S).

The outer regional LGAs of Cobar (A), Bourke (A), Central Darling (A) and Bogan (A) in New South Wales all had low population growth and high population turnover over this period, as did several metropolitan Sydney LGAs including Ashfield (A), Waverley (A) and Woollahra (A). In South Australia, as well as the remote LGA of Coober Pedy (DC), several metropolitan Adelaide LGAs fell into this category, including Norwood Payneham St Peters (C), Prospect (C), Unley (C) and Walkerville (C). In Tasmania, the capital city LGA of Hobart (C) fell into this category.

MAP 6. CATEGORY 3 LGAs: LOW POPULATION GROWTH AND HIGH POPULATION TURNOVER RATES, 2006 to 2011



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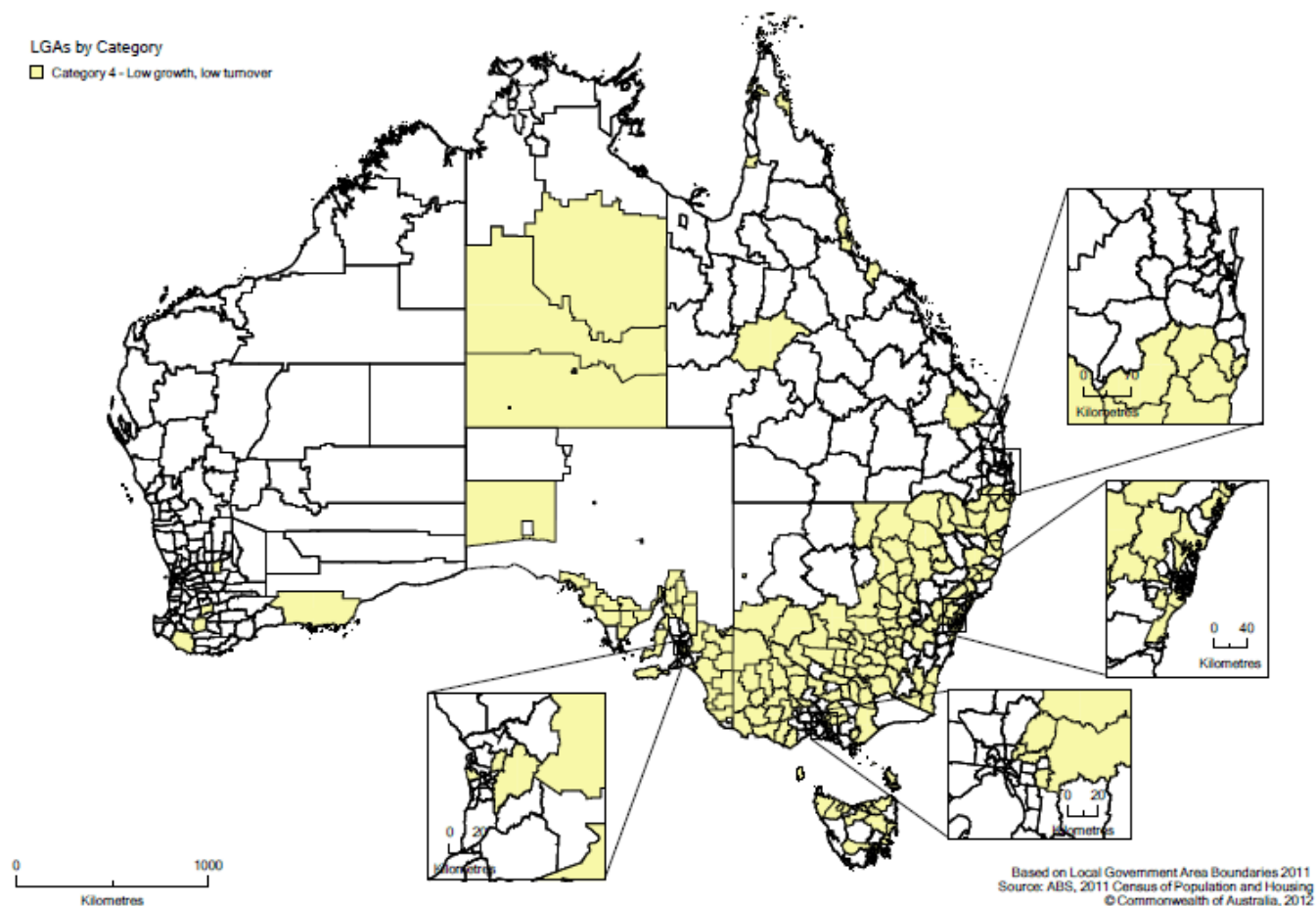
CATEGORY 4: LOW POPULATION GROWTH AND LOW POPULATION TURNOVER, 2006 TO 2011

Low population growth and low turnover indicate an LGA with a stable population and for some LGAs in this category, this may be associated with an ageing population. Over one third of all LGAs in Australia (35%) fell into this category between 2006 and 2011 and, as Map 7 shows, many of these were in rural and regional areas. More than half of all LGAs in Tasmania (59%), New South Wales (57%) and South Australia (54%) fell into this category.

In Tasmania, these included the LGAs of Devonport (C), Launceston (C) and Glenorchy (C), as well as Bombala (A), Broken Hill (C), Newcastle (C) and Wagga Wagga (C) in New South Wales. Charles Sturt (C) and Tea Tree Gully (C) in the GCCSA of Adelaide were in this category, as were the regional LGAs of Mount Gambier (C), Port Augusta (C), Port Pirie City and Dists (M) and Whyalla (DC) in South Australia.

Victoria and the Northern Territory had smaller proportions of LGAs with low population growth and low turnover (44% and 25% respectively). In Victoria, LGAs in this category included Banyule (C), Knox (C) and Corangamite (S) in the GCCSA of Melbourne, as well as Latrobe (C) and Colac-Otway (S). In the Northern Territory, the LGAs in this category included Barkly (S), Central Desert (S) and MacDonnell (S).

MAP 7. CATEGORY 4 LGAs: LOW POPULATION GROWTH AND LOW POPULATION TURNOVER RATES, 2006 to 2011



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SUMMARY

Population growth and turnover are of interest for planning, design and delivery of services and infrastructure in regions. This article examines growth and turnover, both separately and together, between 2006 and 2011.

LGAs were grouped into four categories based on population growth (high – low) and turnover (high – low). Categories 4 (low growth and low turnover) and 1 (high growth and high turnover) contained the most LGAs, with 35% and 31% of all LGAs in Australia, respectively. Category 3 (low growth and high turnover) contained 19% of LGAs and the remaining 15% were in category 2 (high growth and low turnover).

Using this categorisation, a number of regional differences can be observed. Many LGAs with high population growth and high turnover between 2006 and 2011 were in Western Australia and Queensland. Many of the category two LGAs, with high growth and low turnover, were larger regional centres. LGAs in category three, which have low growth and high turnover, were largely situated in rural and remote areas or in the established LGAs of larger cities. The majority of LGAs in Tasmania, New South Wales and South Australia fell into category four, with low growth and low turnover. The results for all LGAs can be found in the datacube in the downloads tab.

This analysis is not without limitations. It uses data from the 2006 and 2011 Censuses of Population and Housing. It should be remembered that the Census is not the source of Australia's official estimates of population growth. The official statistics regarding Australia's population are known as the Estimated Resident Population and are based on the Census, but take into account the Census undercount in their estimation. Estimated Resident Populations for LGAs can be found in '[Regional Population Growth, Australia](#)' (cat. no. 3218.0). The calculation of population turnover uses people's responses to the Census question about where they lived five years ago. However, it should be remembered that not all Australians respond to the Census, or complete this question. Therefore, the average annual population growth and population turnover rates in this article are best considered indicators of actual population growth and turnover. Further explanation of the data and methodological limitations can be found in Appendix 2.

About this Release

This article examines population growth and turnover in Local Government Areas (LGAs), using estimates based on data from the 2006 and 2011 Census of Population and Housing.

Data for all LGAs is available on the downloads tab.

Explanatory Notes

Appendix 1: Population growth and turnover, 2006 to 2011 (Appendix)

APPENDIX 1: POPULATION GROWTH AND TURNOVER - Top and Bottom Ten LGAs

Table 1. AVERAGE ANNUAL POPULATION GROWTH - Top Ten and Bottom Ten LGAs, 2006 to 2011 (a)

Rank	State	LGA	2006 Census count (no.)	Modified 2006 Census Count (b) (no.)	2011 Census count (no.)	Population growth rate (%)	Arrivals (b) (no.)	Departures (c) (no.)	Population flow (no.)	Population turnover rate (d) (per 1000)
1	WA	East Pilbara (S)	6,546	3,500	11,950	12.8	5,193	2,086	7,279	2,079.7
2	WA	Ashburton (S)	6,080	3,811	10,001	10.5	4,699	2,745	7,444	1,953.3
3	WA	Perth (C)	11,480	8,146	16,715	7.8	9,520	3,875	13,395	1,644.4
4	VIC	Wyndham (C)	112,698	88,484	161,577	7.5	45,215	14,130	59,345	670.7
5	WA	Capel (S)	10,209	8,091	14,637	7.5	5,123	2,429	7,552	933.4
6	WA	Roebourne (S)	16,419	9,801	22,899	6.9	8,624	6,347	14,971	1,527.5
7	VIC	Melton (S)	78,909	62,184	109,258	6.7	28,716	10,987	39,703	638.5
8	WA	Serpentine-Jarrahdale (S)	12,893	10,482	17,745	6.6	5,918	2,804	8,722	832.1
9	WA	Wanneroo (C)	110,941	89,165	152,076	6.5	46,634	19,851	66,485	745.6
10	VIC	Cardinia (S)	57,116	47,817	74,175	5.4	21,095	9,702	30,797	644.1
452	WA	Kojonup (S)	2,153	1,920	1,981	-1.7	277	488	765	398.4
453	SA	Cleve (DC)	1,899	1,719	1,733	-1.8	235	393	628	365.3
454	NSW	Brewarrina (A))	1,943	1,651	1,766	-1.9	246	361	607	367.7
455	NSW	Jerilderie (A)	1,643	1,464	1,495	-1.9	175	368	543	370.9
456	NSW	Wakool (A)	4,365	3,895	3,962	-1.9	717	899	1,616	414.9
457	SA	Peterborough (DC)	1,904	1,716	1,731	-1.9	282	409	691	402.7
458	NSW	Murrumbidgee (A)	2,503	2,180	2,261	-2.0	345	511	856	392.7
459	SA	Cooper Pedy (DC)	1,911	1,615	1,694	-2.4	332	420	752	465.6
460	NSW	Hay (A)	3,379	3,054	2,958	-2.6	300	727	1,027	336.3
461	SA	Robe (DC)	1,702	1,536	1,397	-3.9	329	290	619	403.0

(a) Based on 2011 LGA boundaries and excluding unincorporated areas and LGAs with a population of under 1500 in 2006.

(b) Excludes people in the 2011 Census who were aged 0-4 years and those who did not state where they lived 5 years ago.

(c) Excludes No Usual Address.

(d) Calculated using the modified 2006 Census count. See Appendix 2: Data and methodological limitations for details.

Source: Census of Population and Housing, 2006 and 2011

Note: This table is based on place of usual residence. Cells in this table have been randomly adjusted to avoid the release of confidential data.

Table 2. POPULATION TURNOVER - Top Ten and Bottom Ten LGAs, 2006 to 2011(a)

Rank	State	LGA	2006 Census count (no.)	Modified 2006 Census Count (b) (no.)	2011 Census count (no.)	Population growth rate (%)	Arrivals (b) (no.)	Departures (c) (no.)	Population flow (no.)	Population turnover rate (d) (per 1000)
1	WA	East Pilbara (S)	6,546	3,500	11,950	12.8	5,193	2,086	7,279	2,079.7
2	WA	Ashburton (S)	6,080	3,811	10,001	10.5	4,699	2,745	7,444	1,953.3
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4	WA	Roebourne (S)	16,419	9,801	22,899	6.9	8,624	6,347	14,971	1,527.5
5	WA	Port Hedland (T)	11,960	7,639	15,046	4.7	5,700	4,180	9,880	1,293.4
6	SA	Roxby Downs (M)	4,055	3,091	4,702	3.0	1,946	1,879	3,825	1,237.5
7	VIC	Melbourne (C)	76,147	61,486	93,625	4.2	49,346	23,512	72,858	1,185.0
8	SA	Adelaide (C)	16,658	13,830	19,638	3.3	10,301	5,786	16,087	1,163.2
9	WA	Victoria Park (T)	27,959	22,841	32,433	3.0	13,601	8,549	22,150	969.7
10	NT	Palmerston (C)	23,715	18,177	27,705	3.2	9,454	8,053	17,507	963.1
452	VIC	Colac-Otway (S)	20,296	18,066	20,347	0.1	2,364	2,399	4,763	263.6
453	NSW	Bombala (A)	2,538	2,302	2,407	-1.1	256	340	596	258.9
454	VIC	Latrobe (C)	69,326	60,252	72,395	0.9	8,562	6,937	15,499	257.2
455	NT	MacDonnell (S)	5,862	4,523	5,832	-0.1	500	630	1,130	249.8
456	NSW	Broken Hill (C)	19,366	16,702	18,519	-0.9	1,648	2,408	4,056	242.8
457	QLD	Palm Island (S)	1,918	1,697	2,339	3.4	122	270	392	231.0
458	NT	Tiwi Islands (S)	2,129	1,874	2,579	3.9	218	210	428	228.4
459	SA	Anangu Pitjantjatjara (AC)	2,235	1,953	2,439	1.8	219	212	431	220.7
460	QLD	Yarrabah (S)	2,375	2,056	2,408	0.3	103	347	450	218.9
461	NT	East Arnhem (S)	8,169	7,075	9,100	2.2	450	337	787	111.2

(a) Based on 2011 LGA boundaries and excluding unincorporated areas and LGAs with a population of under 1500 in 2006.

(b) Excludes people who were aged 0-4 years in the 2011 Census and those who did not state where they lived 5 years ago.

(c) Excludes No Usual Address.

(d) Calculated using the modified 2006 Census count. See Appendix 2: Data and methodological limitations for details.

Source: Census of Population and Housing, 2006 and 2011.

Note: This table is based on place of usual residence. Cells in this table have been randomly adjusted to avoid the release of confidential data.

Appendix 2: Data and methodological limitations (Appendix)

APPENDIX 2: DATA AND METHODOLOGICAL LIMITATIONS

GEOGRAPHY

In this article, Census data are analysed and presented at the Local Government Area (LGA) geographical level based on LGA boundaries as at 2011. Data from the 2006 Census has been adjusted according to 2011 LGA boundaries. For more information about LGAs, see: Australian Statistical Geography Standard (ASGS): Volume 3 - Non ABS Structures, July 2011 (cat. no. 1270.0.55.003).

LGAs vary considerably in size and population. For this reason, population turnover rates are expressed relative to the 2006 Census count, adjusted for comparability between the 2006 and 2011 Census populations. In this article, a rate per 1,000 population is used.

Table 1 shows the number of LGAs in each state by the size of their Estimated Resident Population (ERP) as at 30 June 2011. The ERP and land area of LGAs varies significantly between and within each state and territory. For example, Murchison (S), a rural LGA in Western Australia, had an ERP of only 123 people in 2011 and a land area of 45,030.2 km². Yet Stirling (C), an LGA encompassing suburban areas of Perth, had a 2011 ERP of 208,399 people and a land area of 104.7km².

TABLE 1. ESTIMATED RESIDENT POPULATION (ERP) of Local Government Areas, 30 June 2011¹

	ERP < 1 000	ERP 1 000 - 4 999	ERP 5 000 - 9 999	ERP 10 000 - 49 999	ERP 50 000 - 99 999	ERP 100 000 - 200 000	ERP > 200 000	Total LGAs
	No. of LGAs	No. of LGAs	No. of LGAs	No. of LGAs	No. of LGAs	No. of LGAs	No. of LGAs	No.
New South Wales	0	27	26	51	25	20	4	152
Victoria	0	2	8	32	12	23	2	79
Queensland	14	25	0	20	3	7	5	74
South Australia	2	23	11	25	5	4	0	70
Western Australia	37	48	11	30	6	6	1	139
Tasmania	1	5	7	13	3	0	0	29
Northern Territory	2	3	5	5	1	0	0	16
Total	56	133	68	176	55	60	11	559

¹ ERP Preliminary Estimates, excluding Unincorporated ACT, Unincorporated Other Territories and other unincorporated areas.

Source: Regional Population Growth, Australia (cat. no. 3218.0)

The ACT is excluded from the above table because it consists of one LGA - Unincorporated ACT. All LGAs with a population of less than 1,500 usually resident people in the 2006 Census of Population and Housing, and unincorporated areas of states and territories, have been excluded from the analysis in this article.

CENSUS COUNTS AND POPULATION ESTIMATES

All data used in this article is from the 2006 and 2011 Censuses of Population and Housing. Census data has certain limitations and some adjustments have been made to the Census counts used in this article. These are explained in more detail in the following paragraphs.

Data presented in this article are based on the concept of 'usual residence'. This refers to the place where people usually lived or intended to live for a period of six months or more in 2011. All visitors to a dwelling have been excluded, as they are counted in their own LGA of usual residence. Overseas visitors are also excluded from the usual residence data.

Data presented in this article may differ from the data in Census tables on the ABS website due to randomisation of numbers. For further information refer to Introduced Random Error. See 2901.0 - Census Dictionary, 2011.

Data from the 2011 Census has been used to calculate the growth rate of the population and population flows. Data from the 2006 Census has been used to calculate the growth rate of the population and the turnover relative to the size of each LGA.

The 2011 Census has three questions about where respondents usually live on Census night, and where the person usually lived one year and five years ago. The answers to these questions are recorded in the indicator variables: Usual Address Indicator Census night (UAI_{CP}), Usual Address One Year Ago Indicator (UAI_{1P}) and Usual Address Five Years Ago Indicator (UAI_{5P}). The analysis undertaken in this article could have been based upon place of residence one year ago, however five years was chosen in order to calculate population turnover and growth rates between the two Censuses. Using place of usual residence one year ago would have produced different results, such as lower turnover rates, as fewer people would move in a one year period than in a five year period. Using usual residence indicators and other variables relating to usual residence makes it possible to identify the pattern of gross and net movement of people between three dates: Census night, one year ago and five years ago. The following usual residence variables are available: Place of Usual Residence (PURP), Place of Usual Residence One Year Ago (PUR_{1P}), Place of Usual Residence Five Years Ago (PUR_{5P}). For more information about usual residence variables in the Census, see: [Census Dictionary](#), 2011 (cat. no. 2901.0).

GROWTH AND TURNOVER RATES

Average annual growth rate in usual resident population between the 2006 and 2011 Census is calculated as a percentage using the formula below, where P_0 is the population at the start of the period, P_n is the population at the end of the period and n is the length of the period between P_0 and P_n in years.

$$[(P_n/P_0)^{1/n}-1] \times 100$$

Population flow is the gross (total) movement into and out of a region. Population flow is defined as the gross movement of people into and out of the region between the 2006 and 2011 Census, expressed in the following formula:

Population Flow = Arrivals + Departures where:

- **Arrivals** were calculated using the series of questions on the 2011 Census form relating to where a person usually lives (on Census Night) and lived five years ago. These questions were used to determine the number of people who lived at a different usual address (to their current LGA) within Australia or lived overseas five years ago. Persons aged 0-4 years at the 2011 Census and 'not stated' addresses, where a person did not answer any component of where they lived five years ago, and people who recorded that they lived elsewhere in Australia five years ago but only partially stated their address, eg. a city, were excluded from this calculation. People who lived overseas five years ago were included.
- **Departures** were calculated using the series of questions on the 2006 Census form relating to where a person usually lives (on Census Night) and lived five years ago. These questions were used to determine the number of people usually resident in Australia who no longer lived in the same LGA in Australia that they lived in five years ago. Excluded were: people who recorded their address five years ago as 'undefined state' and 'undefined city' as it is impossible to identify the LGA these people were and therefore it is not possible to report if or where they have departed; persons aged 0-4 years at the 2006 Census; people who did not state their place of usual residence five years ago i.e. 'not stated'; overseas visitors; and residents temporarily overseas at the time of the 2006 Census.

Population turnover is derived by dividing the population flow by a 2006 Census count.

Population Turnover = Population Flow / Modified 2006 Census count

The **modified Census count** for 2006 used in the calculation of turnover excludes those persons who, at the 2011 Census, were aged 0-4 or who did not state where they lived five years ago. This is consistent with the calculation of arrivals. This modified count is different from the '2006 Census count' and which appears in the tables in this article and is used to calculate population growth.

The modified 2006 census count is: the 2006 Census count less the number of who were aged 0-4 in 2011, less the number of people who in 2011 did not state where they lived five years ago.

A NOTE OF CAUTION

The Census asks people where they usually lived five years before Census night. This information can be compared with place of usual residence on Census night to identify internal migration patterns within Australia. There are some limitations in using Census data to determine patterns of internal migration. Movements of people within Australia can only be determined for those counted in the 2011 Census and who stated a place of usual residence in Australia five years ago. People who made multiple moves between these periods would only be counted as moving once, or not at all if they returned to the same place. Additionally, 7% of the 2011 Census population aged five years and over did not state their usual residence five years ago. These people have been excluded from this analysis, and therefore the arrival and departure numbers may understate the actual number of people who moved between regions in the five year period. For more information on internal migration, see: Census of Population and Housing - Fact Sheets, Internal Migration, 2011.

The official population measure produced by the Australian Bureau of Statistics is the Estimated Resident Population. The use of Census data requires the adoption of different conceptual bases than

are used to create official estimates within the ERP conceptual framework. The main conceptual differences are that the Census-based population turnover estimates in this publication exclude population subgroups which are incorporated into ERP, such as people under 5 years old at the time of the 2011 Census, residents temporarily overseas on Census night, and adjustments for the Census undercount. For more information on ERP, see: Australian Demographic Statistics (cat. no. 3101.0).

Users should have regard to these limitations when interpreting this data. For further information on the 2011 Census of Population and Housing, see the [Census Data Quality Statement](#).

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